© Entomological Society of Indochina
អ្នកជំនាញខាងជាណកសាស្ត្រឥណ្ឌូចិន
The Indochina Entomologist
OPEN ACCESS
New Taxa
ICE, 2 (7): 63–79 (2026)
ISSN (Online) 3065-1107
www.indochinaentomologist.com

https://doi.org/10.70590/ice.2026.02.07
http://zoobank.org/urn:lsid:zoobank.org:pub:522BC35F-C31C-406F-BEE8-BD09B3523CFB

Description of a new flightless stag beetle genus and species from New Guinea with taxonomic notes on its related taxa (Coleoptera: Lucanidae)

Seo-Jun CHANG

Jibong-ro 64, Bucheon-si, Gyeonggi-do, Korea; https://orcid.org/0009-0001-4275-2716; doraji1026@naver.com

Abstract: A new flightless genus and species of Lucanidae, *Pelekysaegus robustus* **gen. et sp. nov.**, is described from New Guinea. The new genus is morphologically allied to *Pachistaegus* de Lisle, 1967, *Tumidaegus* Bomans, 1988, *Cherasphorus* Bomans, 1988 and *Microlucanus* Bomans & Bartolozzi, 1996, sharing a combination of flightlessness and secondary sexual dimorphism at the elytral apex in males. Based on external morphology, several species previously placed in *Gnaphaloryx* Burmeister, 1847 are re-evaluated. *Gnaphaloryx furfuraceus* (de Lisle, 1970) is transferred to *Cherasphorus* Bomans, and *G. pulverosus* (Benesh, 1952) and *G. stigmatifer* de Lisle, 1974 are transferred to *Microlucanus* Bomans & Bartolozzi; *G. pollinosus* de Lisle, 1973 is tentatively transferred to *Microlucanus* Bomans & Bartolozzi. In addition, *Pelekysaegus* **gen. nov.**, together with *Pachistaegus* de Lisle, *Tumidaegus* Bomans, *Cherasphorus* Bomans, and *Microlucanus* Bomans & Bartolozzi, is herein placed in the tribe Aegini Huang & Chen based on shared morphological characters. The taxonomic implications of these changes are briefly discussed.

Keywords: Aegini, new combination, secondary sexual character, systematics, tribal placement

新几内亚一无飞翔能力锹甲新属与新种记述及其相关类群的分类学注释（鞘翅目：锹甲科）

張序準

芝峰路 64 号，富川市，京畿道，韩国

摘要：本文描述了来自新几内亚的锹甲科一无飞翔能力新属及新种——*Pelekysaegus robustus* **gen. et sp. nov.**。该新属在形态上与 *Pachistaegus* de Lisle, 1967、*Tumidaegus* Bomans, 1988、*Cherasphorus* Bomans, 1988 及 *Microlucanus* Bomans & Bartolozzi, 1996 相近，共同特征包括无飞翔能力以及雄性鞘翅末端存在第二性征异型。基于外部形态特征，对先前归入 *Gnaphaloryx* Burmeister, 1847 的多个物种进行了重新评估：将 *Gnaphaloryx furfuraceus* (de Lisle, 1970)移入 *Cherasphorus*，将 *G. pulverosus* (Benesh, 1952)和 *G. stigmatifer* de Lisle, 1974 移入 *Microlucanus*，并将 *G. pollinosus* de Lisle, 1973 暂时移入 *Microlucanus*。此外，基于共有形态特征，本文建议将新属 *Pelekysaegus* **gen. nov.**与 *Pachistaegus*、*Tumidaegus*、*Cherasphorus* 和 *Microlucanus* 一同归入肥角锹族 Aegini Huang & Chen。文中简要讨论了这些变动的分类学意义。

关键词：肥角锹族，新组合，第二性征，系统学，族级归类

Citation: Chang S-J 2026: Description of a new flightless stag beetle genus and species from New Guinea with taxonomic notes on its related taxa (Coleoptera: Lucanidae). *The Indochina Entomologist*, 2 (7): 63–79. [張序準 2026: 新几内亚一无飞翔能力锹甲新属与新种记述及其相关类群的分类学注释（鞘翅目：锹甲科）. 中南半岛昆虫学家, 2 (7): 63–79.]
https://doi.org/10.70590/ice.2026.02.07

Accepted by Cheng-Bin WANG: 4.II.2026; published online: 5.II.2026

Copyright Seo-Jun CHANG. This is an open access article distributed under the terms of the Creative Commons Attribution License (CCBY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Introduction

Several flightless Lucanidae genera from New Guinea and nearby islands, including *Pachistaegus* de Lisle, 1967, *Tumidaegus* Bomans, 1988, *Cherasphorus* Bomans, 1988, and *Microlucanus* Bomans & Bartolozzi, 1996, have not been consistently assigned to a tribe within Lucanidae in the previous studies.

Among those genera, *Pachistaegus* was established by de Lisle (1967) for the New Guinean species *P. besucheti*, with a second species, *P. coiffaiti* described by de Lisle (1975). de Lisle (1970) also described *Aegus furfuraceus* based on a single male specimen from New Guinea and noted its similarity to *Cherasphorus sculptipennis* (Parry, 1864). Mizunuma & Nagai (1994) subsequently suggested that this species probably belongs to *Gnaphaloryx* Burmeister, 1847, and Bartolozzi *et al.* (2011) replaced this species into *Gnaphlaroryx* Burmeister. Yamamoto & Qodri (2022) pointed out morphological similarities between *Gnaphaloryx furfuraceus* (de Lisle) and *Pachistaegus besucheti* de Lisle and noted that further study of *G. furfuraceus* (de Lisle) is needed. These differing views indicate uncertainty regarding the generic placement of this species. Yamamoto & Qodri (2022) also noted that *Gnaphaloryx stigmatifer* de Lisle,1974 and *G. pollinosus* de Lisle, 1973 resemble species of *Tumidaegus* Bomans.

After establishment of *Pachistaegus* de Lisle, Bomans (1988) later described the female of *Pachistaegus besucheti* de Lisle and established two additional flightless genera, *Cherasphorus* Bomans and *Tumidaegus* Bomans from New Guinea. Bomans & Bartolozzi (1996) described *Microlucanus* from Guadalcanal, Solomon Islands, and suggested that the new genus is closely related to *Pachistaegus* de Lisle and *Tumidaegus* Bomans. Notably, they reported a distinctive secondary sexual character at the elytral apex in *Microlucanus*, which is also observed in *Pachistaegus* de Lisle, *Tumidaegus* Bomans, *Cherasphorus* Bomans, and the new genus described in this study. This character, together with fused elytra, supports the hypothesis that these genera represent a closely related lineage within Lucanidae. This hypothesis is further supported by the shared reduction of the scutellum in *Microlucanus* Bomans & Bartolozzi, *Pachistaegus* de Lisle, *Tumidaegus* Bomans, and the new genus described herein.

In this study, a new genus from New Guinea that morphologically resembles those flightless genera is described under the name *Pelekysaegus* **gen. nov.** with a new species, *Pelekysaegus robustus* **gen. et sp. nov.** In addition, based on morphological evidences, several species previously placed in *Gnaphaloryx* Burmeister are transferred to *Cherasphorus* Bomans and *Microlucanus* Bomans & Bartolozzi, and five genera (*Pachistaegus* de Lisle, *Tumidaegus* Bomans, *Cherasphorus* Bomans, *Microlucanus* Bomans & Bartolozzi, and *Pelekysaegus* **gen. nov.**) are here placed into tribe Aegini.

Material and methods

Examined specimens were dried and mounted, with genitalia stored in microtubes containing 80% ethanol. Photographs of the specimens were taken using a digital camera (Canon EOS R5) with a macro lens [Canon MP-E 65mm F2.8 1-5x]. For Figs 1D–F and 2B, images were acquired using a digital camera (Canon EOS 5D Mark IV) with a macro lens [Tamron Auto Focus 60mm f/2.0 SP DI II LD IF 1:1 Macro Lens]. Image stacking was processed using Zerene Stacker and editing was processed using Adobe Photoshop (Adobe Inc. San Jose, CA, USA). Terminology mainly follows Holloway (2007). Body length was measured including the mandibles, and width was measured across the median angles of the pronotum. The following abbreviations are used in this paper: **APC**, the personal collection of Antonio Polak, Mitchell, Australian Capital Territory, Australia; **BPBM**, Bernice Pauahi Bishop Museum, Hawaii, USA; **CIL**, Chungwoo Insect Lab, Seoul, Korea; **FMNH**, Field Museum of Natural History, Chicago, USA; **Te Papa**, Museum of New Zealand, Te Papa Tongarewa, New Zealand.

Taxonomy

Family Lucanidae Latreille, 1804
Subfamily Lucaninae Latreille, 1804
Tribe Aegini Huang & Chen, 2013
Genus *Pelekysaegus* Chang gen. nov.

https://zoobank.org/0B62AB77-47BF-4FB7-8C82-602224BA7DE6

Type species: *Pelekysaegus robustus* Chang **gen. et sp. nov.**

Etymology. From the Greek term "πέλεκυς", meaning "doubled-bitted axe" and "*Aegus*" after the genus name of Lucanidae. The name refers to the characteristic axe-shaped internal tooth of the male mandible, which is bifid and reminiscent of a double-bitted axe. The gender of the name is masculine.

Diagnosis. *Pelekysaegus* **gen. nov.** can be distinguished from other genera of Aegini by the combination of the following features: dorsal surface covered with long setae; head with a pair of unpunctured anterolateral tubercles; canthus narrow, fully dividing the eye; male mandibles not bidentate, without dorsomedial tooth; anterolateral angles of pronotum not advanced in male; posterolateral angles of pronotum strongly emarginate; elytra fused along the suture; each elytron with three costae marked with long golden setae.

Description. Body length: 14-17 mm (n=2). **Width:** 7-8 mm (n=2). **Shape:** Entirely convex. Dorsal surface shiny black, covered with golden setae. Ventral surface well punctured and setose. **Head:** Transverse, with a pair of unpunctured anterolateral tubercles located diagonally above the eyes. Clypeus visible in dorsal view, with the anterior margin emarginate in the male, almost straight in the female. Eyes small, fully divided by narrow canthi. Male mandible slightly longer than head, with a single stout internal tooth, slightly curved upward, apex simple. Female mandibles curved, with one simple inner tooth. Antennae geniculate, 10-segmented. Antennal club 3 segmented, with the last two antennomeres entirely tomentose. Mentum broader than long, solid, punctured. **Pronotum:** Transverse, wider than the head. Lateral margin crenulate. Anterolateral angles of the pronotum advanced in female, not advanced in male. Posterolateral corners strongly emarginate. Pronotal disc marked by a median longitudinal depression, middle concave. Prosternal process well developed, widened behind the procoxae, apex rounded. **Scutellum:** Reduced, broader than long. **Elytra:** Oval, fused along the suture. Each elytron has three costae marked with long golden setae. Base concave. Lateral margin crenulate. Apex relatively smooth in male, densely setose in female. **Legs:** Densely covered with setae. Yellow setae on the ventral surface of the tarsal joints long. **Abdomen:** Ventrites setose. Setae longer in male. **Male genitalia:** Aedeagus elongate. Paramere shorter than basal piece. Penis slightly shorter than the paramere and wider than the paramere in ventral view. Base of the penis without a pair of projections on the dorsal crossbar. Apex of flagellum slightly enlarged. Paired struts present.

TABLE 1. Comparison of secondary sexual dimorphism of the elytral apex among flightless lucanid genera discussed in this study.

Genera	Male elytral apex	Female elytral apex
***Pelekysaegus* gen. nov.**	Relatively smooth, sparsely and finely punctured, lacking prominent setae.	Densely covered with setae. not different from the rest of the tegmen.
Microlucanus	Smooth and shiny, sparsely and finely punctured.	Not different from the rest of the tegmen.
Tumidaegus	Smooth and shiny, sparsely and finely punctured.	Densely punctured. not different from the rest of the tegmen.
Pachistaegus	Relatively smooth.	Unknown
Cherasphorus	Relatively smooth, sparsely and finely punctured, lacking dense setae.	Densely covered with setae. Not different from the rest of the tegmen.

TABLE 2. Morphological differences among *Pelekysaegus* **gen. nov.** and its related generea.

	***Pelekysaegus* gen. nov.**	***Pachistaegus***	***Tumidaegus***	***Cherasphorus***	***Microlucanus***
Eye	Fully dividied by canthus	Partially divided by canthus	Fully divided by canthus	Fully divided by canthus	Partially divided by canthus
Male mandible	Male mandible with a single axe-shaped internal tooth.	Male mandible with a basal tooth and dorsomedial tooth.	Male mandible with basal tooth followed by denticle.	Male mandible with basal tooth (dorsomedial tooth present in *C. furfuraceus*)	Male mandible with a double tooth followed by one or more denticules
Median longitudinal depression of pronotum	present	present	absent	present	present
Scutellum	reduced	reduced	reduced	normal	reduced

Pelekysaegus robustus Chang gen. et sp. nov.

https://zoobank.org/60DC81DF-4866-4BF8-BB5F-7341D6015634

Figs 1, 2, 3, 10A

Type locality. Papua New Guinea, Morobe province, Aseki.

Type materials. Holotype: ♂, Oiwa Village, Aseki, Morobe Province, Papua New Guinea, XII.2002 (CIL). **Paratype:** 1 ♀, with the same location data as holotype, 16.VIII.2006 (APC).

Etymology. From the Latin term 'robustus' meaning 'thick'.

Holotype description. (Figs 1A–C, 2A, 3, 10A) **Body length:** 17 mm. **Width:** 8 mm. **Color:** Shiny black. **Head:** Broader than long, anteriorly concave, forming wide triangular depression, with a pair of unpunctured tubercles located diagonally above the eyes. Clypeus broad, filling the intermandibular space, broadly emarginate anteriorly. Canthi narrow, fully dividing the eyes. Postocular margin with dull temporal process. Mandible punctured, slightly longer than head, with a single axe-shaped inner tooth below the middle, slightly curved upwards, apex simple. Antennae geniculate, with 3-segmented club. Antennomere 3-6 symmetrical, 7 asymmetrical. Mentum slightly bilobed anteriorly. **Pronotum:** Broader than long, wider than head or elytra, hexagonal in shape. Lateral margin crenulate, not parallel. Posterior margin narrower than the anterior margin of the elytra. Anterolateral and median angles prominent, posterior angles rounded. Posterolateral corners strongly emarginate. Disc marked by a median longitudinal depression, middle concave. **Scutellum:** very small but visible, broader than long. **Elytra:** Very convex, fused along the suture. Region around the suture smooth. Base region concave. Lateral margin crenulate. Each elytron with three costae marked with long golden setae. Costa 1 is the longest but not reaching the elytral margin. Costa 2 intermediate, 3 shortest. Space between elytral costae covered with moderate setigerous puncture. Apex relatively smooth, weakly rugose, with minute punctures. **Hind wings:** atrophied. **Legs:** Femora and tibia densely covered with golden setae. Protibia almost straight, with outer teeth usually decreasing in size distally. Mesotibia relatively short, metatibia almost straight. Ventral setae of the tarsal articulations long. **Abdomen:** Ventrites covered with golden setae. **Male genitalia:** Aedeagus about 2.7 times longer than wide (without flagellum). Proximal end of basal piece narrowed. Paramere about 0.7 times as long as the basal piece in the ventral view. Penis slightly shorter than the paramere and wider than the paramere in ventral view. Flagellum long, about 2 times longer than the aedeagus, with apex slightly enlarged. Paired struts present.

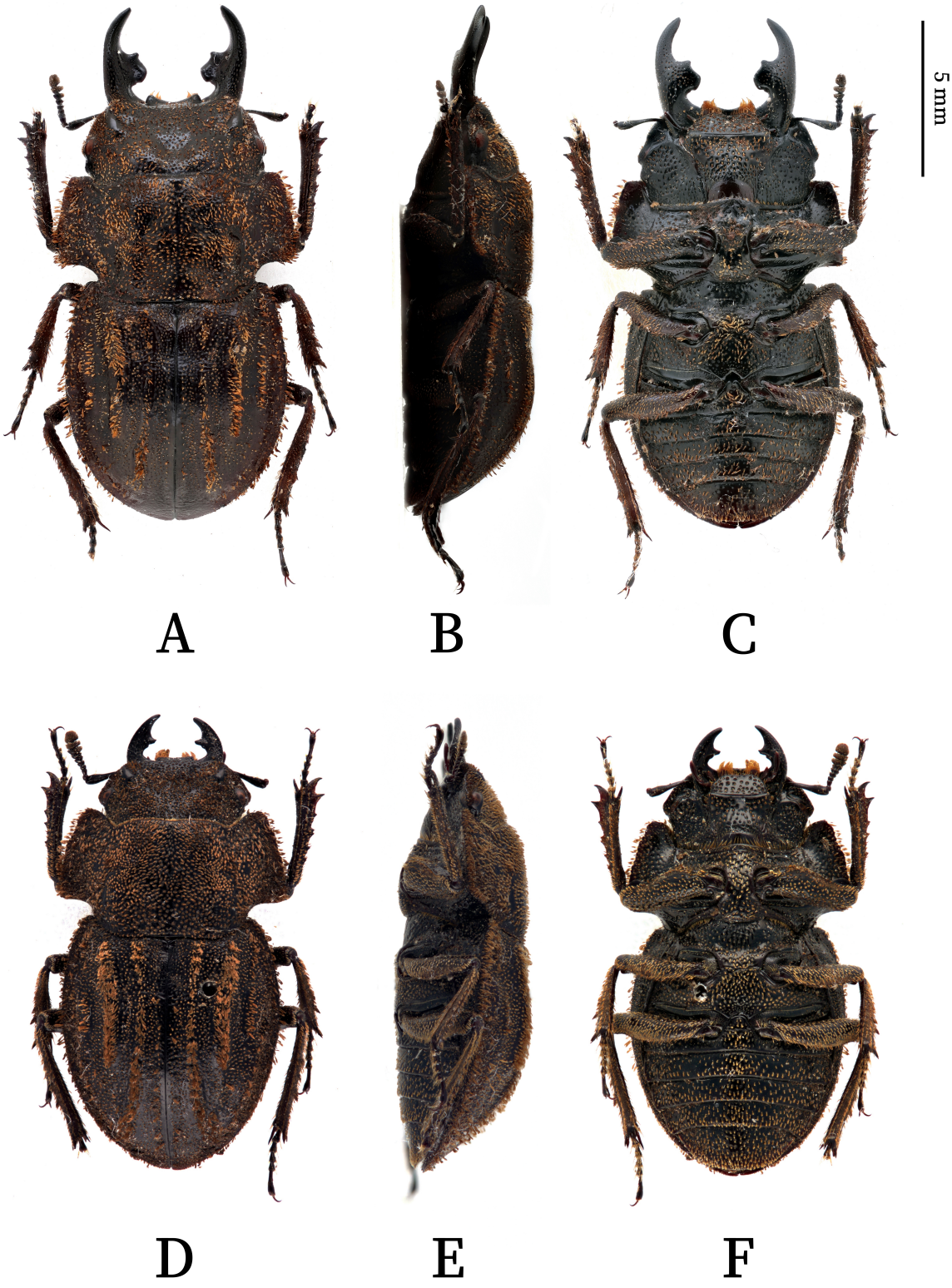

FIGURE 1. *Pelekysaegus robustus* **gen. et sp. nov**: **A-C** holotype **D-F** female paratype **A, D** dorsal view **B, E** lateral view **C, F** ventral view.

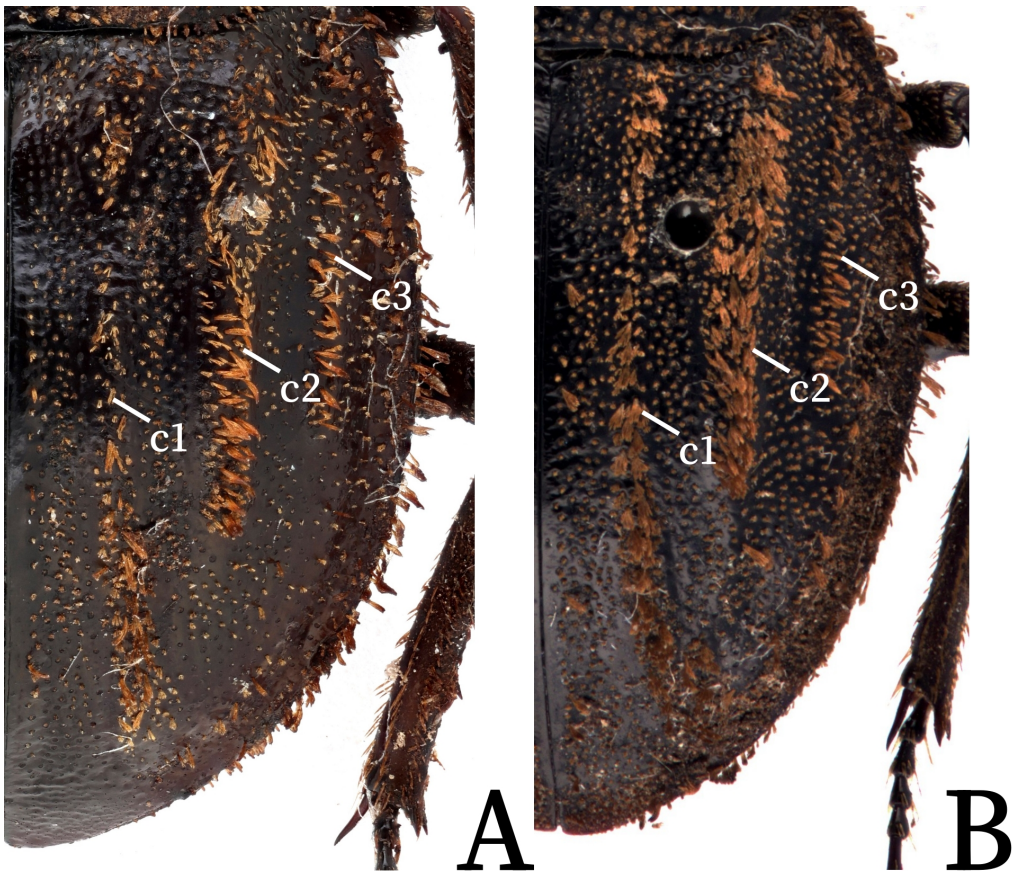

FIGURE 2. Elytra of *Pelekysaegus robustus* **gen. et sp. nov.**: **A** male **B** female. Abbreviation: c1–3, elytral costa 1–3.

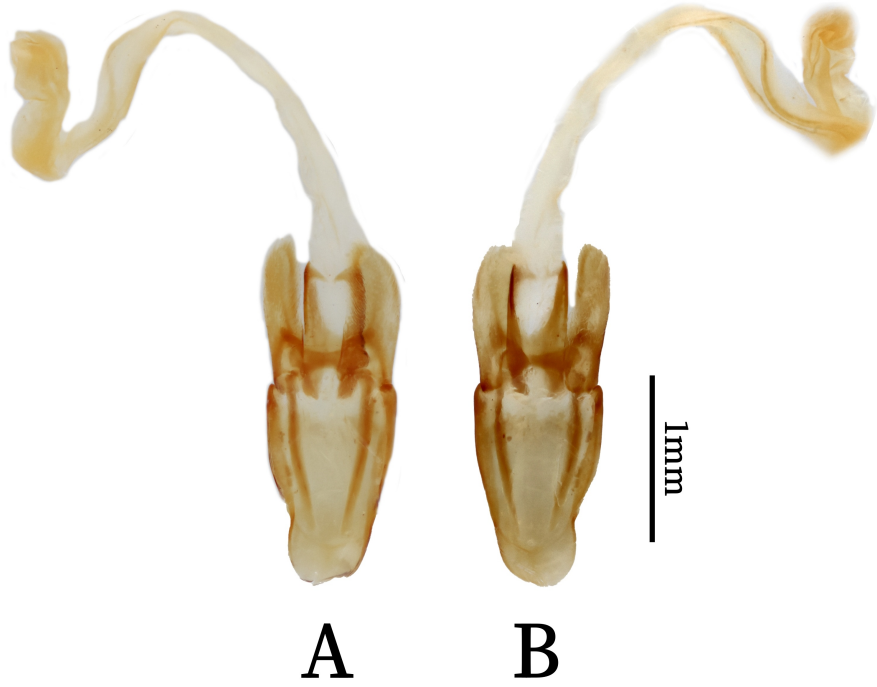

FIGURE 3. Aedeagus of *Pelekysaegus robustus* **gen. et sp. nov.**: **A** dorsal view **B** ventral view.

Paratype female. (n=1, Figs 1D–F, 2B) **Body length:** 14 mm. **Width:** 7 mm. Externally different from the holotype as follows: Head almost hexagonal, more densely punctured and setose. Anterior margin of clypeus nearly straight. Temporal process absent. Mandibles more coarsely punctured, slenderer, and shorter, bearing a single simple tooth in the middle. Mentum narrower. Pronotum more densely setose. Anterolateral angles of the pronotum project forward. Elytra slightly less convex. Elytral costa 1 reaching the elytral margin. Elytral apex densely covered with golden setae. Setae of ventrites shorter.

Distribution. Papua New Guinea: Aseki

Remark. The holotype was covered with soil. Given that *P. robustus* **n. gen. et n. sp.** is flightless with fused elytra, it is highly probable that this species lives on the ground.

Related genera of *Pelekysaegus* gen. nov.

The diagnoses provided below are intended to facilitate comparison with the new genus and do not represent a revision of the generic concepts.

Genus *Pachistaegus* de Lisle, 1967

Pachistaegus de Lisle, 1967: 541.

Type species: *Pachistaegus besucheti* de Lisle, 1967.

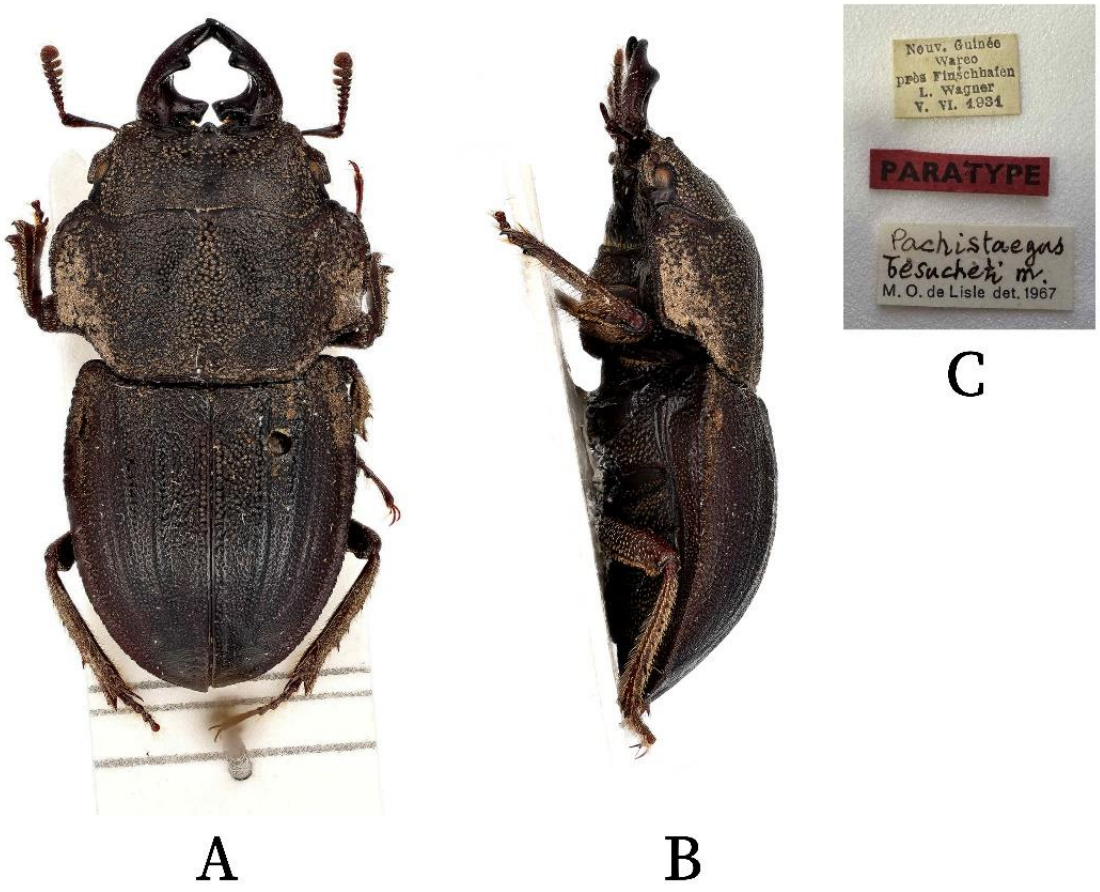

FIGURE 4. *Pachistaegus besucheti* de Lisle, 1967, male paratype (ⓒKakizoe Showtaro): **A** dorsal habitus **B** lateral habitus **C** data labels.

Diagnosis. This genus can be distinguished from its related genera by the combination of the following characters: body convex; dorsal surface densely punctured; canthus thick, almost dividing the eye; male mandible bidentate, with a thick basal tooth and dorsomedial tooth; anterolateral angles of pronotum advanced; pronotal disc with medial longitudinal depression, middle concave; scutellum reduced; base region of elytra concave; elytra with costae.

Composition. 2 species: *P. besucheti* de Lisle, 1967 (Fig. 4), *P. coiffaiti* de Lisle, 1975.

Genus *Tumidaegus* Bomans, 1988

Tumidaegus Bomans, 1988: 8.

Type species: *Tumidaegus variolosus* Bomans, 1988.

Diagnosis. This genus can be distinguished from its related genera by the combination of the following characters: dorsal surface densely punctured; canthus narrow, fully dividing the eye; anterior margin of clypeus trilobed; male mandible with basal tooth followed by denticle; anterolateral angles of pronotum advanced; posterolateral corners of pronotum not strongly emarginate; pronotal disc without median longitudinal depression and concavity; scutellum reduced; elytra without costae.

Composition. 1 species: *T. variolosus* Bomans, 1988 (Figs 5, 10C, 11B).

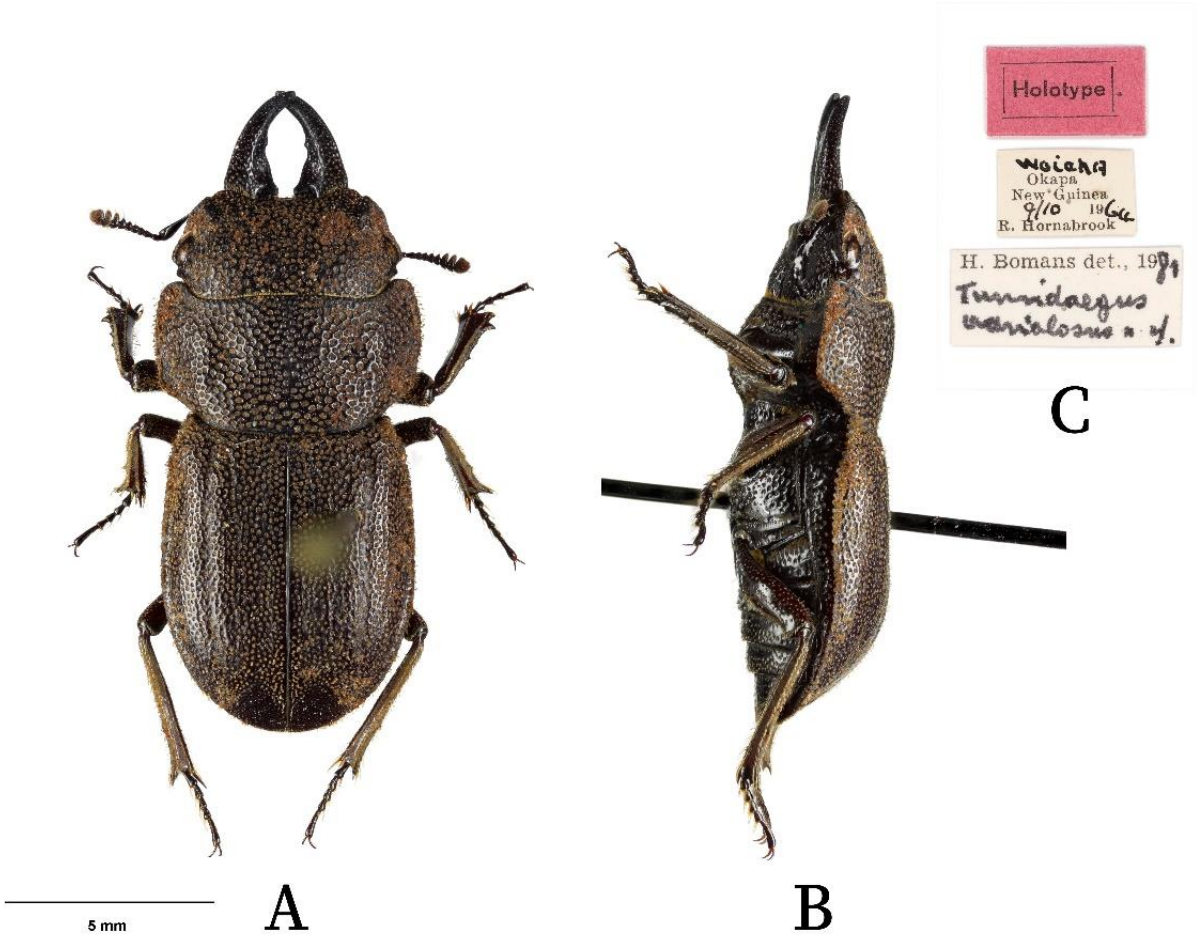

FIGURE 5. *Tumidaegus variolosus* Bomans, 1988, male holotype (ⓒTe Papa, registration number AI.000086, licensed under CC BY 4.0.): **A** dorsal habitus **B** lateral habitus **C** data labels.

Genus *Cherasphorus* Bomans, 1988

Cherasphorus Bomans, 1988: 13.

Type species: *Cherasphorus inflatus* Bomans, 1988.

Diagnosis. This genus can be distinguished from its related genera by the combination of the the following characters: body less convex; dorsal surface covered with dense setae; canthus fully dividing the eye; pronotal disc with median longitudinal depression; anterolateral angles of the pronotum advanced; scutellum not reduced; elytral costae marked with dense setae; region between the elytral costae with large punctures.

Composition. 4 species: *C. inflatus* Bomans, 1988 (Figs 6, 11A); *C. sculptipennis* (Parry, 1864) (Fig. 10D); *C. suzukii* Fujita, 2010; *C. furfuraceus* (de Lisle, 1970) **comb. nov.**

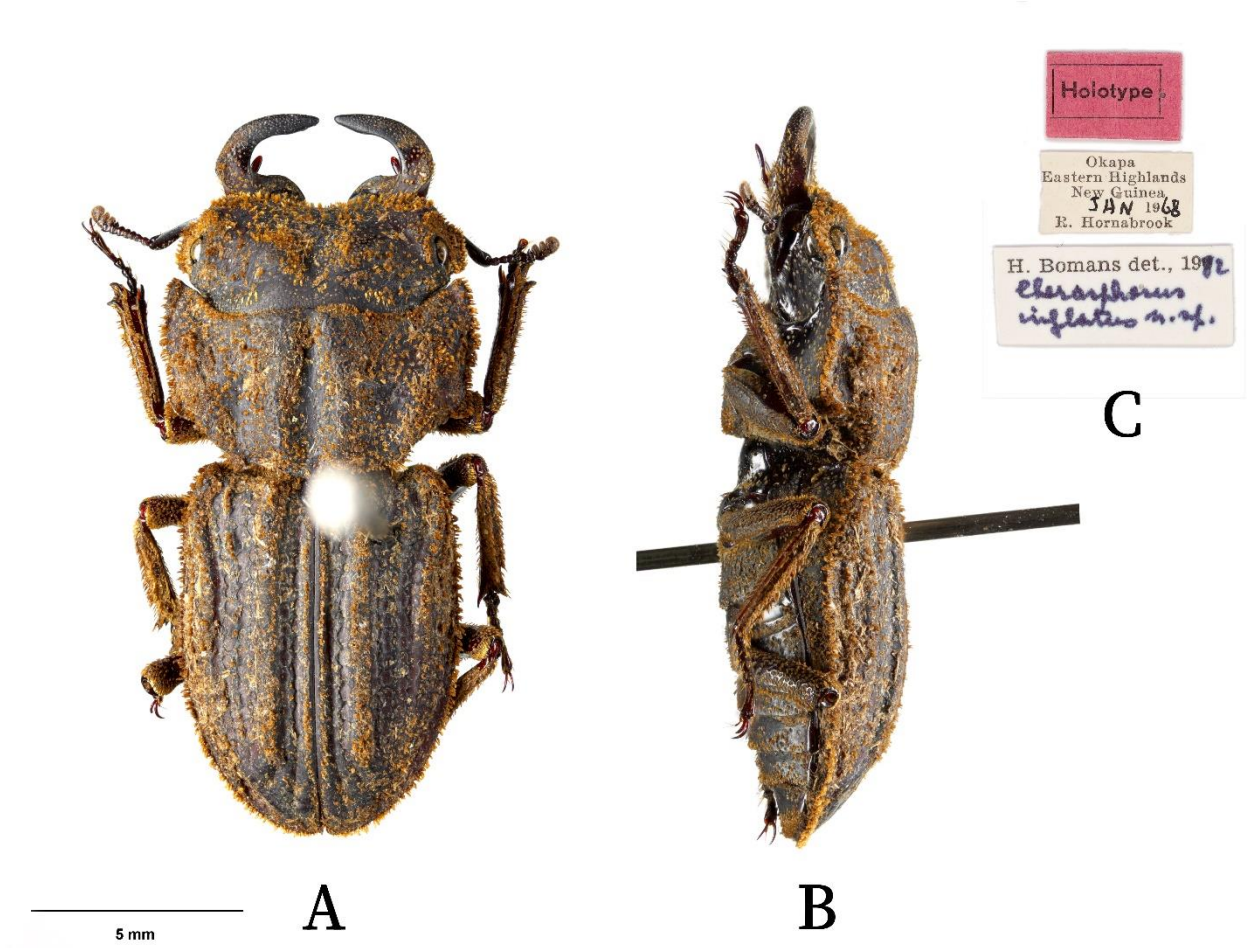

FIGURE 6. *Cherasphorus inflatus* Bomans, 1988, male holotype (ⓒTe Papa, registration number AI.000041, licensed under CC BY 4.0.): **A** dorsal habitus **B** lateral habitus **C** data labels.

Microlucanus Bomans & Bartolozzi, 1996

Microlucanus Bomans & Bartolozzi, 1996: 214.

Type species: *Microlucanus greensladeae* Bomans & Bartolozzi, 1996.

Diagnosis. This genus can be distinguished from its related genera by the combination of the the following characters: body convex; canthus partially dividing the eye by 2/3 of its diameter; inner margin of male mandible with a double tooth followed by one or more denticules; scutellum reduced; base region of elytra concave.

Composition. 4 species: *M. greensladeae* Bomans & Bartolozzi, 1996 (Fig. 7); *M. pulverosus* (Benesh, 1952) **comb. nov.** (Fig. 8); *M. pollinosus* (de Lisle, 1973) **comb. nov.**; *M. stigmatifer* (de Lisle, 1974) **comb. nov.** (Fig. 9).

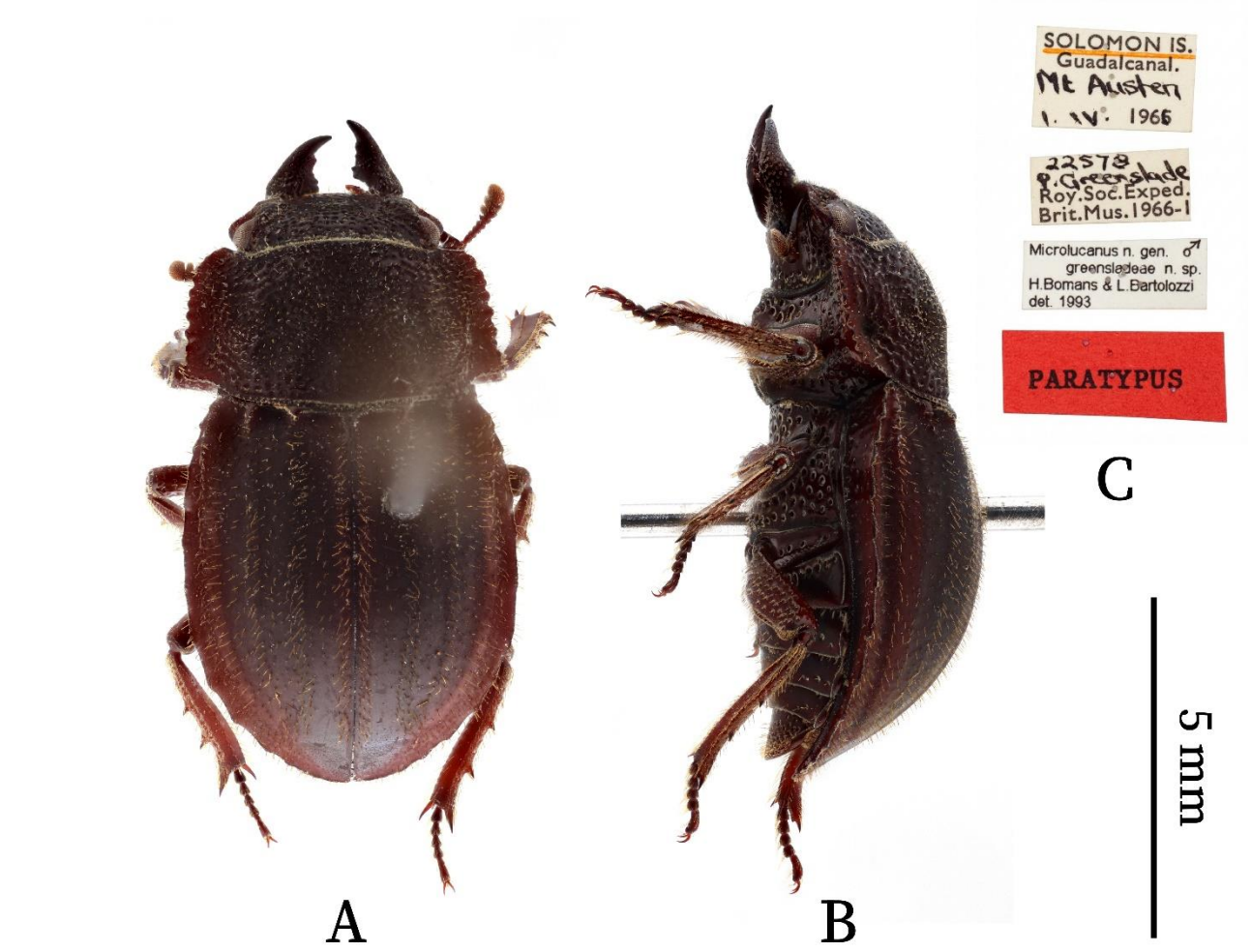

FIGURE 7 *Microlucanus greensladeae* Bomans & Bartolozzi, 1996, male paratype: **A** dorsal habitus **B** lateral habitus **C** data labels.

Reassessment of species previously assigned to *Gnaphaloryx* Burmeister

Cherasphorus furfuraceus (de Lisle, 1970) comb. nov.

Aegus furfuraceus de Lisle, 1970: 113, Fig. 19, 5c; Mizunuma & Nagai 1994: 309, pl. 147, fig. 98; Taroni 1998: 31; Krajcik 2001: 56; Krajcik 2003: 16; Fujita 2010: 420, pl. 245, fig. 1404-1.

Aegus (Gnaphaegus) furfuraceus de Lisle, 1970; Maes 1992: 97.

Gnaphaloryx furfuraceus de Lisle, 1970; Bartolozzi *et al.* 2011: 53; Yamamoto & Qodri 2022: 12.

Diagnosis. This species can be distinguished from other *Cherasphorus* species by its male mandible with dorsomedial tooth and narrower eye canthus.

Remarks. de Lisle (1970) originally described *Aegus furfuraceus* based on a single male specimen from the Wandammengebirge, New Guinea, noting that the elytral apex is “non épineux,” i.e., lacking dense setation. Subsequent authors transferred this species to *Gnaphaloryx* Burmeister, largely following a broad interpretation of external resemblance (Bartolozzi *et al.* 2011), without explicit discussion of generic diagnostic characters.

However, the morphology of *A. furfuraceus* does not conform to the current concept of *Gnaphaloryx* Burmeister. The holotype exhibits a male mandible with a basal tooth and dorsomedial tooth, a condition commonly observed among aegine genera. Furthermore, the elytral costation and pronotal configuration are more consistent with those of *Cherasphorus inflatus* Bomans than with *Gnaphaloryx* species.

The smooth elytral apex observed in the male, previously mentioned by de Lisle (1970), likely represents a secondary sexual character, a condition shared with several flightless aegine genera mentioned above. Based on the combined evidence from mandibular morphology, elytral structure, and pronotal shape, *Aegus furfuraceus* is herein transferred to *Cherasphorus* Bomans.

This placement is further supported by the following combination of characters: eyes fully divided by canthi; pronotal disc covered with reddish setae, marked by a median longitudinal depression with paired lateral concavities; anterolateral angles of pronotum advanced; posterolateral corners strongly emarginate; scutellum well developed; each elytron bearing five costae with long, dense setae, with costa 1 juxta-sutural and costa 2 prominent and broad.

Microlucanus pulverosus (Benesh, 1952) comb. nov.

Fig. 8

Aegus pulverosus Benesh, 1952: 136; Benesh 1960: 105; Bomans & Bartolozzi 1996: 219; Krajcik 2001: 60; Krajcik 2003: 26.

Aegus (Gnaphaegus) pulverosus Benesh, 1952; Maes 1992: 97.

Gnaphaloryx pulverosus Benesh, 1952; Bartolozzi *et al.* 2011: 53; Yamamoto & Qodri 2022: 15.

Diagnosis. This species closely resembles *M. greensladeae* Bomans & Bartolozzi, but can be distinguished by its more rounded pronotum and less crenulated lateral margin of the elytra.

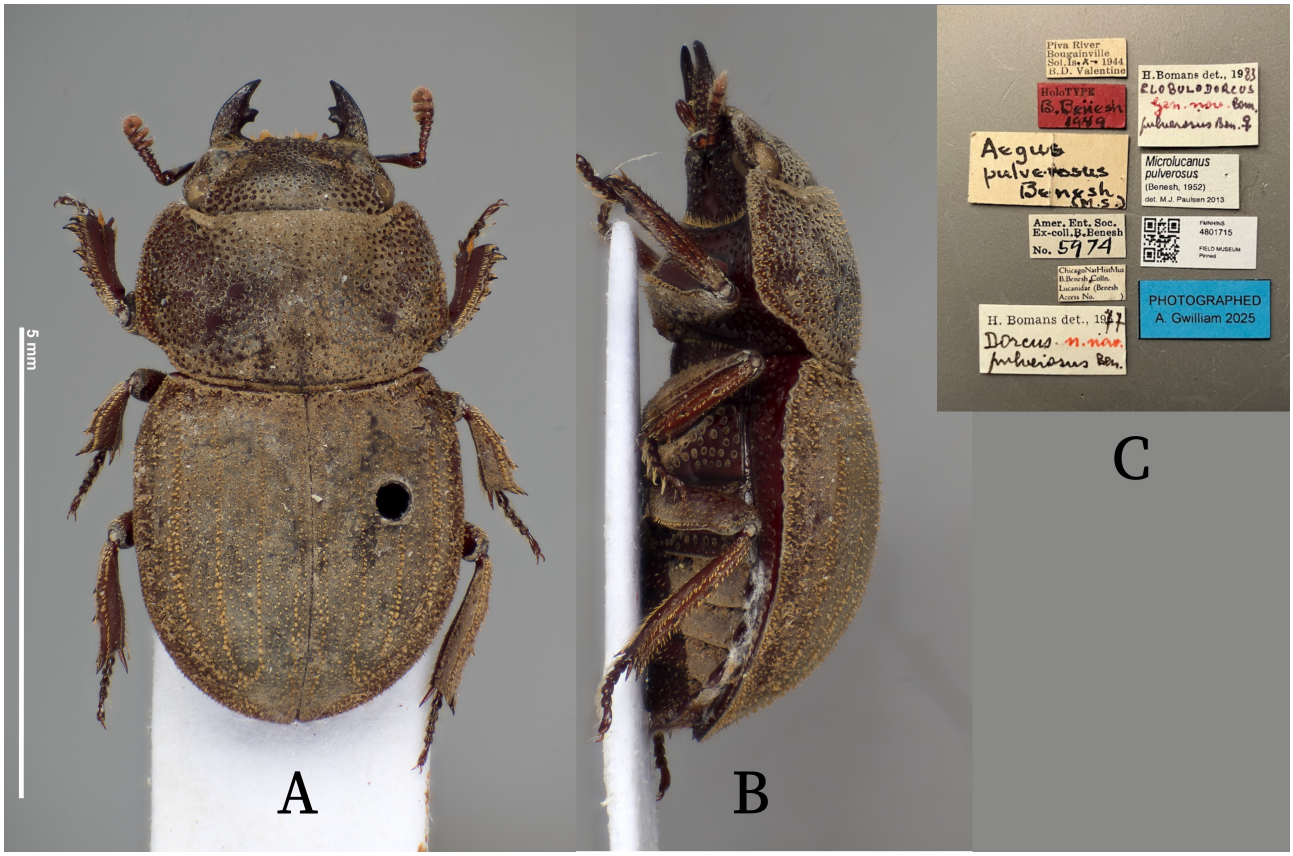

FIGURE 8 *Microlucanus pulverosus* (Benesh, 1952) **comb. nov.**, female holotype (ⓒFMNH): **A** dorsal habitus **B** lateral habitus **C** data labels.

Remarks. *Aegus pulverosus* was described by Benesh (1952) from a single female specimen collected in Bougainville, Solomon Islands. Examination of photographs of the holotype deposited in FMNH (Fig. 8) reveals a close overall resemblance to *Microlucanus greensladeae* Bomans & Bartolozzi in habitus, body proportions, trilobed clypeus and elytral configuration.

It is noteworthy that the holotype bears a determination label by M. J. Paulsen assigning the specimen to *Microlucanus pulverosus*. This determination, however, has never been formally published and therefore has no nomenclatural standing.

Although male characters are unknown, the available female morphology corresponds well with the current concept of *Microlucanus* as defined by Bomans & Bartolozzi (1996), particularly in the general body form and canthus partially dividing the eye by 2/3 of its diameter. Given these similarities, this species is herein transferred to *Microlucanus* Bomans & Bartolozzi.

Microlucanus pollinosus (de Lisle, 1973) comb. nov.

Gnaphaloryx pollinosus de Lisle, 1973: 141; Maes 1992: 96; Mizunuma & Nagai 1994: 309, pl.147, fig. 99; Bomans & Bartolozzi 1996: 220; Krajcik 2001: 64; Krajcik 2003: 88; Fujita 2010: 420, pl. 247, fig. 1406-1; Bartolozzi *et al.* 2011: 53; Yamamoto & Qodri 2022: 15.

Diagnosis. This species can be distinguished from other *Microlucanus* species by its elytron having five costae.

Remarks. de Lisle (1973) described *Gnaphaloryx pollinosus* based on a single female specimen from Bougainville, Solomon Islands, assigning it to *Gnaphaloryx* primarily due to its partially divided eyes. Subsequent authors have expressed uncertainty regarding this placement, noting similarities with *Pachistaegus* de Lisle and *Tumidaegus* Bomans (Mizunuma & Nagai 1994), or suggesting closer affinity to *Tumidaegus* than to *Gnaphaloryx* (Yamamoto & Qodri 2022).

Gnaphaloryx females are characterized by strongly outwardly bent protibiae, a feature absent in *G. pollinosus*, whose protibiae are normal. Moreover, the original description states that the scutellum of the holotype is invisible, a character shared by *Pachistaegus* de Lisle, *Tumidaegus* Bomans, *Microlucanus* Bomans & Bartolozzi and *Pelekysaegus* **gen. nov.**, but not by *Gnaphaloryx* Burmeister.

Considering the partially divided eyes and reduced scutellum, *Microlucanus* Bomans & Bartolozzi appears to be the most suitable generic placement among currently recognized taxa. Therefore, *G. pollinosus* de Lisle is herein tentatively transferred to *Microlucanus* Bomans & Bartolozzi. This placement should be regarded as provisional, pending re-examination of the holotype and the discovery of male specimens, which are essential for a more definitive generic assignment.

Microlucanus stigmatifer (de Lisle, 1974) comb. nov.

Fig. 9

Gnaphaloryx stigmatifer de Lisle, 1974: 786; Maes 1992: 96; Bomans & Bartolozzi 1996: 220; Krajcik 2001: 64; Krajcik 2003: 88; Bartolozzi *et al.* 2011: 54; Yamamoto & Qodri 2022: 16.

Diagnosis. This species can be distinguished from other *Microlucanus species* by the combination of the following features: anterior margin of clypeus not trilobed; posterolateral corners of the pronotum strongly emarginate; lateral pronotal margins weakly crenulate; elytra densely punctured.

Remarks. de Lisle (1974) described *Gnaphaloryx stigmatifer* from a single male specimen from Bougainville, Solomon Islands, assigning it to *Gnaphaloryx* based on its incompletely divided eyes and narrow posterior margin of the pronotum. However, recent work indicates that only *Gnaphaloryx opacus* Burmeister, 1847 possesses partially divided eyes within the genus (Yamamoto & Qodri 2022), rendering this character insufficient for generic

placement.

Photographs of the holotype deposited in BPBM (Fig. 10) reveal a suite of characters inconsistent with *Gnaphaloryx*, including a reduced scutellum, convex elytra, and a smooth elytral apex. Notably, the specimen bears an unpublished genus label "Brevidorcus" by Hugues E. Bomans, suggesting earlier recognition of its distinctiveness.

FIGURE 9 *Microlucanus stigmatifer* (de Lisle, 1974) **comb. nov.**, male holotype (ⓒBPBM/ Lisha Jasper): **A** dorsal habitus **B** ventral habitus **C** lateral habitus **D** data labels.

FIGURE 10 Elytral apex of males: **A** *P. robustus* **gen. et sp. nov. B** *M. greensladeae* Bomans & Bartolozzi **C** *T. variolosus* Bomans **D** *C. sculptipennis* (Parry).

FIGURE 11 Aedeagus (ventral view): **A** *C. inflatus* Bomans **B** *T. variolosus* Bomans.

The male exhibits a canthus dividing the eye by approximately 2/3 of its diameter and a mandible with a double tooth followed by a denticle, characters consistent with *Microlucanus* Bomans & Bartolozzi. Based on these characters, *G. stigmatifer* de Lisle is herein transferred to *Microlucanus* Bomans & Bartolozzi.

Discussion

Secondary sexual character

Among the flightless lucanid genera discussed above, *Microlucanus* is particularly informative because a distinct secondary sexual character has been explicitly documented in males. Bomans & Bartolozzi (1996) reported that the male of *M. greensladeae* possesses a smooth elytral apex, a previously unrecognized secondary sexual character (Fig. 10B). A similar condition is observed in the male holotype of *Pelekysaegus robustus* **gen. et sp. nov.**, which exhibits a relatively smooth, sparsely and finely punctured elytral apex lacking prominent setae (Fig. 10A). However, the female paratype of *Pelekysaegus robustus* **gen. et sp. nov.** has an elytral apex densely covered with setae. This sexual dimorphism is likewise present in *Tumidaegus* Bomans (Fujita 2010; Fig. 10C).

The elytral apex of male *Pachistaegus besucheti* de Lisle is also relatively smoother than the rest of the elytra and similar to that of *P. robustus* **gen. et sp. nov.**, although the female elytral apex has not yet been documented. In addition to this shared secondary sexual character, these four genera (*Pelekysaegus* **gen. nov.**, *Microlucanus* Bomans & Bartolozzi, *Pachistaegus* de Lisle, and *Tumidaegus* Bomans) are all flightless and possess a reduced scutellum, which indicate their close relationships.

A comparable pattern of sexual dimorphism is also observed in another New Guinean flightless lucanid genus, *Cherasphorus* Bomans. In male *C. inflatus* Bomans, the prominent line marked with long setae on elytral costa 2 does not reach the elytral margin, as in *P. robustus* **gen. et sp. nov.** (Figs 2A, 6A). The male of *C. sculptipennis* (Parry) also has a relatively smooth elytral apex (Fujita 2010; Fig. 10D). Although *Cherasphorus* Bomans possesses a normal scutellum, the secondary sexual dimorphism of the elytral apex and the similar pronotal shape shared with *Pelekysaegus* **gen. nov.** support a close relationship with the genera mentioned above. In addition, the male of *Bartolozziolucanus* Nagai, a flightless genus currently placed in Aegini Huang & Chen, also possesses a shinier elytral apex than the female (Fujita 2010).

Tribal placement of *Pelekysaegus* gen. nov. and its related genera

Shibata (2023) noted that *Tumidaegus* Bomans, *Cherasphorus* Bomans, and *Microlucanus* Bomans & Bartolozzi appear to be associated with *Aegus* W.S. Macleay, 1819. Huang & Chen (2013) likewise suggested that *Tumidaegus* Bomans may belong to the tribe Aegini Huang & Chen. Huang & Chen (2013) also pointed out that *Microlucanus* Bomans & Bartolozzi cannot be placed in Dorcini Parry, 1864 because its aedeagus lacks a pair of projections on the dorsal crossbar.

Similarly, the male genitalia of *Pelekysaegus* **gen. nov.**, *Tumidaegus* Bomans, and *Cherasphorus* Bomans lack a pair of projections on the dorsal crossbar and exhibit a general similarity to one another (Figs 3, 11). Although the external morphology of *Cherasphorus* Bomans resembles that of *Gnaphaloryx* Burmeister, as noted by Krajcik (2003), the male genitalia of the latter possess a pair of projections on the dorsal crossbar (Huang & Chen 2013), a diagnostic feature of Dorcini Parry. The male genitalia of *Pachistaegus* de Lisle remain unknown; however, its close external morphological similarity to the genera discussed above suggests, but does not demonstrate, a similar genital configuration.

Species of *Pelekysaegus* **gen. nov.**, *Pachistaegus* de Lisle, *Tumidaegus* Bomans, *Cherasphorus* Bomans, and *Microlucanus* Bomans & Bartolozzi share a bifurcate protibial apex with teeth on the outer lateral margin, a female mandible with a simple tooth, and a male mandible with a well-marked basal tooth. Furthermore, these five genera share a secondary sexual dimorphism of the elytral apex, a feature also present in the aegine genus

Bartolozziolucanus Nagai. Based on this combination of external and genital characters, these genera are herein provisionally placed in the tribe Aegini Huang & Chen.

At present, the tribe Aegini Huang & Chen contains the following genera: *Aegus* W.S. Macleay, *Aegotypus* Parry, 1874, *Bartolozziolucanus* Nagai, *Bomansius* Lacroix, 1978, *Cherasphorus* Bomans, *Irianoaegus* Fujita, 2010, *Microlucanus* Bomans & Bartolozzi, *Pachistaegus* de Lisle, *Pelekysaegus* **gen. nov.**, *Torynognathus* Arrow, 1935, and *Tumidaegus* Bomans. Further phylogenetic studies are required to test this hypothesis and to clarify the relationships among these genera.

Acknowledgements

I deeply thank Dr. Young-Chul Jang (Chungwoo Insect Lab, Korea) for the wonderful photographs used in this work, providing important specimens and advice, supporting my studies, and helping with the literature. I am indebted to Dr. Luca Bartolozzi (Italy), for providing an important specimen and supporting this study. I am grateful to Mr. Antonio Polak (Canberra, Australia) for kindly allowing me to examine a female specimen of the new species. I deeply appreciate Dr. Showtaro Kakizoe (National Museum of Nature and Science, Japan) for providing the beautiful photographs of *P. besucheti* de Lisle used in this paper and helpful suggestions. Mr. Tetsuo Miyashita and Mr. Kei Miyashita (Tokyo, Japan) are thanked for providing an important specimen. Dr. Adrienne Antonsen and Dr. Lisha Jasper (Bernice Pauahi Bishop Museum, USA) are appreciated for providing the photographs of *G. stigmatifer* de Lisle used in this paper. I also thank Dr. Bruno de Medeiros and Dr. Tatiana Sepulveda (Field Museum of Natural History, USA) for providing the photographs of *A. pulverosus* Benesh used in this paper. I would like to thank Mr. Eunjoong Kim (Natural Science Museum, Korea), Mr. Gooyoung Jeong and Mr. Wonseok Choi (Seoul, Korea) for their kind help. Lastly, I deeply thank the two anonymous reviewers for their careful reviews and helpful suggestions.

References

Bartolozzi L, Cianferoni F & Monte C 2011: Checklist of the Lucanidae from the Indo-Australian transition zone. *Biodiversity, Biogeography and Nature Conservation in Wallacea and New Guinea*, pp. 43–58.

Benesh B 1952: Description of a new species of *Aegus* from the Solomon Islands, with remarks on other stag beetles. *The Pan-Pacific Entomologist*, 28 (3): 136–138.

Benesh B 1960: *Coleopterorum Catalogus Supplementa*, Pars 8: Lucanidea (sic). W. Junk, The Hague, 178 pp.

Bomans HE 1988: Inventaire d'une collection de Lucanidae récoltés en Nouvelle-Guinée et descriptions d'espèces nouvelles (Coleoptera). *Nouvelle Revue d'Entomologie (Nouvelle Série)*, 5 (1): 5–16.

Bomans HE & Bartolozzi L 1996: Description of *Microlucanus greensladeae* n. gen. n. sp. (Coleoptera: Lucanidae) from the Solomon Islands and checklist of the stag beetle fauna of Bougainville and the Solomon Islands. *Tropical Zoology*, 9: 213–222. https://doi.org/10.1080/03946975.1996.10539309

de Lisle MO 1967: Note sur quelques Coleoptera Lucanidae nouveaux ou peu connus. *Revue Suisse de Zoologie*, 74 (2): 521–544. https://doi.org/10.5962/bhl.part.75858

de Lisle MO 1970: Deuxième note sur quelques Coleoptera Lucanidae nouveaux ou peu connus. *Revue Suisse de Zoologie*, 77 (1): 91–117. https://doi.org/10.5962/bhl.part.75882

de Lisle MO 1973: Description de trois Coléoptères lucanides nouveaux. *Nouvelle Revue d'Entomologie*, 3 (2): 137–142.

de Lisle MO 1975: Note sur la position systématique de quelques Coleoptera Lucanidae avec description de cinq espèces nouvelles. *Nouvelle Revue d'Entomologie*, 5: 261–274.

Fujita H 2010: *The lucanid beetles of the world*. Mushi-Sha's Iconographic Series of Insects 6. Mushi-Sha, Tokyo, +472 pp., 248 pls.

Holloway BA 2007: *Lucanidae (Insecta: Coleoptera)*. Fauna of New Zealand 61. Manaaki Whenua Press, Lincoln, 254 pp.

Huang H & Chen C-C 2013: Phylogeny and systematics of Lucaninae (sensu Holloway, 1960 & 1968) from China. *In*: Huang H &

Chen C-C (Eds) *Stag Beetles of China*, Vol. II. Formosa Ecological Company, Taiwan, pp. 41–113.

Krajcik M 2001: *Lucanidae of the World, Catalogue – Part I: Checklist of the Stag Beetles of the World (Coleoptera: Lucanidae)*. Milan Krajcik, Czech Republic, 108 pp.

Krajcik M 2003: *Lucanidae of the World, Catalogue – Part II: Encyclopaedia of the Lucanidae (Coleoptera: Lucanidae)*. Milan Krajcik, Czech Republic, 197 pp.

Maes J-M 1992: *Lista de los Lucanidae (Coleoptera) del mundo*. Revista Nicaraguense de Entomologia, No. 22, 121 pp.

Mizunuma T & Nagai S 1994: *The lucanid beetles of the world*. Mushi-Sha, Nakano, 337 pp.

Shibata K 2023: A synopsis of the genus *Aegus* (Coleoptera: Lucaninae) in the world. *Be-Kuwa*, 86: 6–34.

Taroni G 1998: *Il Cervo Volante: Coleoptera Lucanidae*. Electa, 182 pp

Yamamoto S & Qodri A 2022: A new stag beetle species of the genus *Gnaphaloryx* Burmeister from Java, western Indonesia. *Oriental Insects,* 57 (2): 707–727. https://doi.org/10.1080/00305316.2022.2120920

Additional information

Author contributions: The author solely contributed to this work.

Conflict of interest: The author has declared that no competing interests exist.

Data availability: All of the data that support the findings of this study are available in the main text.

Ethical statement: No ethical statement was reported.

Funding: This study was self-funded by the author.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of *ICE* and/or the editor(s). *ICE* and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.

Photo Gallery

贵州盔螋 *Cranopygia guizhouensis* Chen, 2024
Yanlou, Guiyang, Guizhou
photograph by Ri-Xin JIANG [姜日新]